

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

**GIRAFA.COM, INC.,**

**Plaintiff and Counterclaim  
Defendant**

**v.**

**C.A. No. 07-787-SLR**

**AMAZON WEB SERVICES, LLC,  
AMAZON.COM, INC., IAC  
SEARCH & MEDIA, INC., SNAP  
TECHNOLOGIES INC., YAHOO!  
INC., SMARTDEVIL INC.,  
EXALEAD INC., and EXALEAD  
S.A.,**

**Defendants and Counterclaimants.**

**REBUTTAL REPORT OF SAUL GREENBERG, PH.D, ON SECONDARY  
CONSIDERATIONS**

### **A. Introduction**

1. In Dr. Brad Myers' expert report on validity, filed March 13, 2009, he opined that the secondary considerations of (1) long-felt need and failure of others, (2) skepticism of experts, (3) commercial success, and (4) praise of others are indicators of the nonobviousness of the '904 patent. [Myers Validity Report ¶¶ 143-165.] I previously reserved the right to offer a report in rebuttal to any expert opinion on secondary considerations offered by Girafa, as Myers did not opine on secondary considerations in his opening report. [Greenberg Invalidity Report ¶ 238].

2. I understand that the Supreme Court indicated in *Graham v. John Deere Co.*, 383 U.S. 1 (1966) that certain secondary considerations may be considered in determining whether a claimed invention would have been obvious to one of ordinary skill in the art at the time the invention was made. I understand that it is the patentee's burden to raise secondary considerations in response to a *prima facie* showing of obviousness.

3. I have previously opined on the obviousness of the '904 patent in my invalidity expert report of February 13, 2009, which is hereby incorporated by reference.

### **B. Long-felt need and failure of others**

4. In Dr. Myers' validity report, he states that the prior art "did not provide a practical way to provide thumbnails." [Myers ¶ 144] He opines that "the long-felt but unsolved need is to have a practical way to provide large numbers of thumbnail images of web pages." [*Id.*] He then lists the perceived advantages of the features of the '904 patent and concludes that "[t]hus, there was a long-felt but unresolved need, which others had failed to solve." [*Id.*]

5. I understand that "[e]stablishing a long-felt need requires a showing that others skilled in the art perceived a need and that this perception persisted over a long period of time without resolution by the prior art." *Markman v. Lehman*, 987 F. Supp. 25, 43 (D. D.C. 1997), *aff'd*, 178 F.3d 1306 (Fed. Cir. 1998).

6. Dr. Myers has not identified, and I am not aware of, any evidence identifying "a practical way to provide large numbers of thumbnail images of web pages" as a known problem in the prior art.<sup>1</sup> Nor has he identified any failed attempts to solve this problem.<sup>2</sup> On the contrary, the solution to this problem would have been apparent to one skilled in the art, working from the

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<sup>1</sup> Dr. Myers refers to pre-existing systems for providing thumbnail images in his Validity Report at ¶ 143, but does not provide evidence that any of the systems listed identified "a practical way to provide large numbers of thumbnail images of web pages" as a problem. Additionally, Dr. Myers does not analyze how, or even whether, these systems failed to solve the problem of providing thumbnail preview images of web pages.

<sup>2</sup> Dr. Myers states without analysis that "These prior art systems, unlike the '904 patent, did not provide a practical way to provide thumbnails." [Validity Report ¶ 144] I disagree. I believe many of the prior art systems identified in my Feb. 13, 2009 report provided a practical way to provide thumbnail images of web pages.

current state of knowledge in the late 1990s and common sense, as discussed in detail in my invalidity report at ¶¶ 204-207.

7. To the extent that Dr. Myers claims that the ‘904 patent specifically addressed the need for separate image and web servers and the need for providing thumbnails of “home pages” instead of the target web pages,<sup>3</sup> such features were known in the art before the patent was filed, as I discussed in my invalidity report. As I explained, “[s]eparate image servers specifically designed to efficiently serve images separated from other web page content were patented, commercially available, and justified in accompanying literature.” [Greenberg Invalidity Report, summarized at ¶ 117 and discussed in more detail at ¶¶ 89-91, 113-116]. Additionally, thumbnail visual images have been used within a web page where the thumbnail represents another web page (including home pages). [Greenberg Invalidity Report, summarized at ¶ 80 and discussed in more detail at ¶¶ 34, 39, 44, 47, 48, 50, 56, 61, 64, 72-74, and 76]

8. Dr. Myers provides no evidence of a long-felt need for either of these claimed innovations, and I am not aware of any evidence suggesting a long-felt and unsolved need for these, or any other, purportedly innovative elements of the ‘904 patent. Dr. Myers also offers no evidence that others tried and failed to implement either separate image and web servers, or “home pages” instead of target pages. On the contrary, anyone who attempted to implement either of these features likely would have succeeded, because the combinations yield only predictable results, as discussed in my invalidity report at ¶¶ 198, 201-202.

9. In my opinion, long-felt need and the failure of others are not relevant secondary considerations of non-obviousness of the ‘904 patent.

### **C. Skepticism of experts**

10. Dr. Myers opined that authors argued that it was “important to have thumbnails that were up-to-date and represented the target web page in order for the systems to be successful.” [Myers ¶ 145] He cited passages from Schmid and Kraft which stated that dynamically generated thumbnail previews could overcome some perceived limitations of static thumbnails. [Id.] Dr. Myers concludes that experts “implicitly expressed skepticism for the success of the way that Girafa substitutes home pages for the target page.” Dr. Myers did not provide evidence of any skepticism on the part of experts in the field for any other purportedly innovative elements of the ‘904 patent, and I am not aware of any such evidence, nor am I aware of any direct evidence of skepticism for substituting a “home page” for the target page of a hyperlink.

11. I understand that evidence that experts initially expressed skepticism, surprise, or incomprehension upon hearing of an invention, and thereafter praised its value, can be probative evidence of non-obviousness. *United States v. Adams*, 383 U.S. 39, 43-44, 52 (1966). I also

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<sup>3</sup> Throughout this report, I focus on the two features – separate image and web servers and “home page” thumbnails – identified by Myers in his analysis of secondary considerations. However, there are no other features, or claim limitations, that would alter my analysis or conclusions regarding secondary considerations of obviousness.

understand that courts do not give weight to skepticism that “was directed to economic and commercial factors, not the technical merit of [the claimed invention].” *Joy Technologies Inc. v. Manbeck*, 751 F. Supp. 225, 232 (D. D.C. 1990), *aff’d* 959 F.2d 226 (Fed. Cir. 1992), *cert. denied*, 506 U.S. 829 (1992). Dr. Myers has provided no evidence that any experts initially expressed skepticism upon hearing of the claimed invention and later praised its value, and I am not aware of any such evidence.<sup>4</sup>

12. Additionally, the claimed invention does not successfully solve the problem identified by Kraft, who thought users would find thumbnails more useful if they were up-to-date.<sup>5</sup> The ‘904 patent does not address this topic, and is silent as to how frequently the thumbnail images used in the system or method must be updated. Claims 16 and 33, which disclose a method and system, respectively, for “generating an image server database of thumbnail visual images of web pages” say nothing about updating the images after they are initially captured.

13. The factor Dr. Myers identifies as the target of “implicit” skepticism is the use of “home page” images used in place of target page images. However, this substitution has no bearing on whether the system is using static or dynamic thumbnail previews, as discussed in Schmid and Kraft. The “home page” preview images captured by Girafa’s system and method will be out-of-date shortly after they are captured, unless the image server database is updated regularly, which the ‘904 patent does not address. Yuval Yarom, a named inventor on the ‘904 patent, confirmed this point, testifying that the “invention is not about frequency of capture. . . .” [Yarom Depo. at 161:18-19] Consequently, I do not believe there is any link between displaying a thumbnail image that is different from the target page of the hyperlink and the degree to which the particular image displayed is an up-to-date representation of the page it purports to provide a preview image of.

14. Finally, other experts realized that it could be beneficial to display images representing top-level pages, and displayed no skepticism to the idea.<sup>6</sup> For example, Terveen anticipated Girafa’s method in March 1999, when he stated that “the Web site is a *more* appropriate basic

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<sup>4</sup> I also do not believe any “implied” skepticism of using the home page in place of the target page preview was directed towards the technical aspects of doing so. If anything, skepticism that users would find out-of-date preview images useful was directed toward commercial and/or aesthetic aspects of such systems.

<sup>5</sup> It is clear that the process described in the ‘904 patent for generating thumbnail images would fall within at least Schmid’s definition of a “dynamic thumbnail,” by which he simply meant an image that was not created manually. [See Schmid at 2 (“Besides the advantages of static thumbnails, they surely have negative aspects. First of all, it is expendable work to create good-looking and meaningful images manually.”)]

<sup>6</sup> Myers provides no evidence of skepticism of any other aspect of the ‘904 patent, including separate servers, multiplicity of downloaders, etc. so I have not addressed these other allegedly novel features in detail. I am not aware of any skepticism for the concepts of using a separate image server or a multiplicity of downloaders – on the contrary, these features were well-known in the art and their benefits were well understood.

unit than the Web page” and disclosed a crawler that captured a thumbnail image of the site’s root page rather than the individual interior pages. [Terveen-1 (emphasis added)] Additionally, Brown disclosed an embodiment that substituted a generated icon representing the top-level domain of a linked-page for the preview of the page itself, also anticipating Girafa’s solution. [US Patent 6,356,908, col. 8:16-21]

15. Therefore, in my opinion, the skepticism of experts is not a relevant secondary consideration of non-obviousness of the ‘904 patent.

#### **D. Commercial success**

16. Myers opined that Girafa’s invention was commercially successful and cited marketing materials, corporate emails, deposition transcripts from corporate representatives of various defendants, and the declaration of Shirli Ran to demonstrate commercial success. [Myers ¶¶ 146-161]

17. Dr. Myers admitted in his deposition that he was not qualified to testify about financial success.

Q: Would you have liked to have had the financials from these companies?

A: Since, as you said, I don't have any business background, I would have expected that, if there were lots of financial kind of numbers, that some other expert would have been more appropriate to opine on that issue.

[Myers (April 18, 2008) 124:13-19]

18. I understand that under applicable law it is the plaintiff’s burden to show that the patented technology is commercially successful. [*Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311-12 (Fed. Cir. 2006)] Additionally, I understand that “[e]vidence of commercial success, or other secondary considerations, is only significant if there is a nexus between the claimed invention and the commercial success.” *Id.* I further understand that under the applicable law the patentee must prove a nexus between the innovative patent claims and the product’s commercial success. [*Sandt Tech., Ltd. v. Resco Metal & Plastics Corp.*, 264 F.3d 1344, 1355 (Fed. Cir. 2001)]

19. In my opinion, Dr. Myers has not established that any of Girafa’s products practice the invention claimed in the ‘904 patent. I do not believe that any accused IACSAM products practice the claimed invention, and it is my understanding that experts for the other defendants in this case believe that none of the other accused products practice the claimed invention. Moreover, in my opinion, Dr. Myers has not established a nexus between the patent claims and the commercial success, if any, of Girafa’s products and/or the defendants’ respective products.<sup>7</sup>

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<sup>7</sup> Neither myself nor Dr. Myers is an expert in economic market analysis, and I have no opinion on whether the Girafa products are financially successful. However, the fact that no one, not even Girafa, practices the claimed invention, suggests to me that the invention is not commercially successful.

### **1. The commercial success of “thumbnails in general” is irrelevant**

20. The bulk of Dr. Myers’ section on commercial success is dedicated to the “Commercial Success of Thumbnails in General.” [*Compare* Myers ¶¶ 146-154 (“Commercial Success of Thumbnails in General” *with id.* ¶¶ 155-159 (“Commercial Success of Using Separate Servers to Store and Provide the Images), ¶¶ 160-161 (“Commercial Success of Substituting Home Pages for the Target Pages”)]

21. Dr. Myers’ discussion of the commercial success of thumbnail previews in general is irrelevant to the analysis of non-obviousness, because Girafa clearly did not invent or patent thumbnails in general. [*See, e.g.*, testimony from named inventor Yuval Yarom at 49:5-9] Therefore, there is no nexus between this general discussion of the commercial success of thumbnail previews and the invention claimed in the ‘904 patent, and Dr. Myers’ citations to press releases, emails, and testimony about “thumbnails in general” are irrelevant to the analysis of any commercial success of the claimed invention.

### **2. Dr. Myers does not establish a nexus between the claimed invention and any commercial success of the Girafa products**

22. Myers never claims that Girafa’s products practice the features of the ‘904 patent. Ran did not state in her declaration that Girafa’s system implements the patented technology. It is my belief that Girafa does not practice the claims of the ‘904 patent as Dr. Myers has construed them. Documents that I understand were produced by Girafa in this case indicate that Girafa did not use separate web and image servers. Yuval Yarom wrote in an email to Microsoft in January 2002 that: “The Girafa Cache System first handles the URL to homepage conversion, and then retrieves the image of the resulting URL from the Girafa database.” [GIR001867.16819, attached hereto as Ex. 1] This suggests that Girafa used a single publicly accessible cache server, rather than the “separate” image server and web server disclosed in the ‘904 patent.<sup>8</sup> A document Yarom references from September 2001 further describes the Girafa cache system: “The Girafa Cache Server (GCS) is a proxy of the Girafa Image Servers located at a site data center.” The document then explains the architecture of the GCS:

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<sup>8</sup> In Myers’ validity report, he attempted to distinguish the ‘904 patent from the [Kopetzky] reference by stating that a cache or proxy server does not meet the patent’s separate server claim: “However, it is not relevant that the proxy server is separate from the browser and from other servers that deliver the source document, since the source document is being modified by the proxy server before it is sent to the browser. Therefore, the proxy server is serving as both the image server and the web server with the visualization functionality.” [Myers Validity Report ¶ 48] Girafa’s implemented system, as illustrated in Figure 1, shows the caching server modifying the source document before it is sent to the web browser.

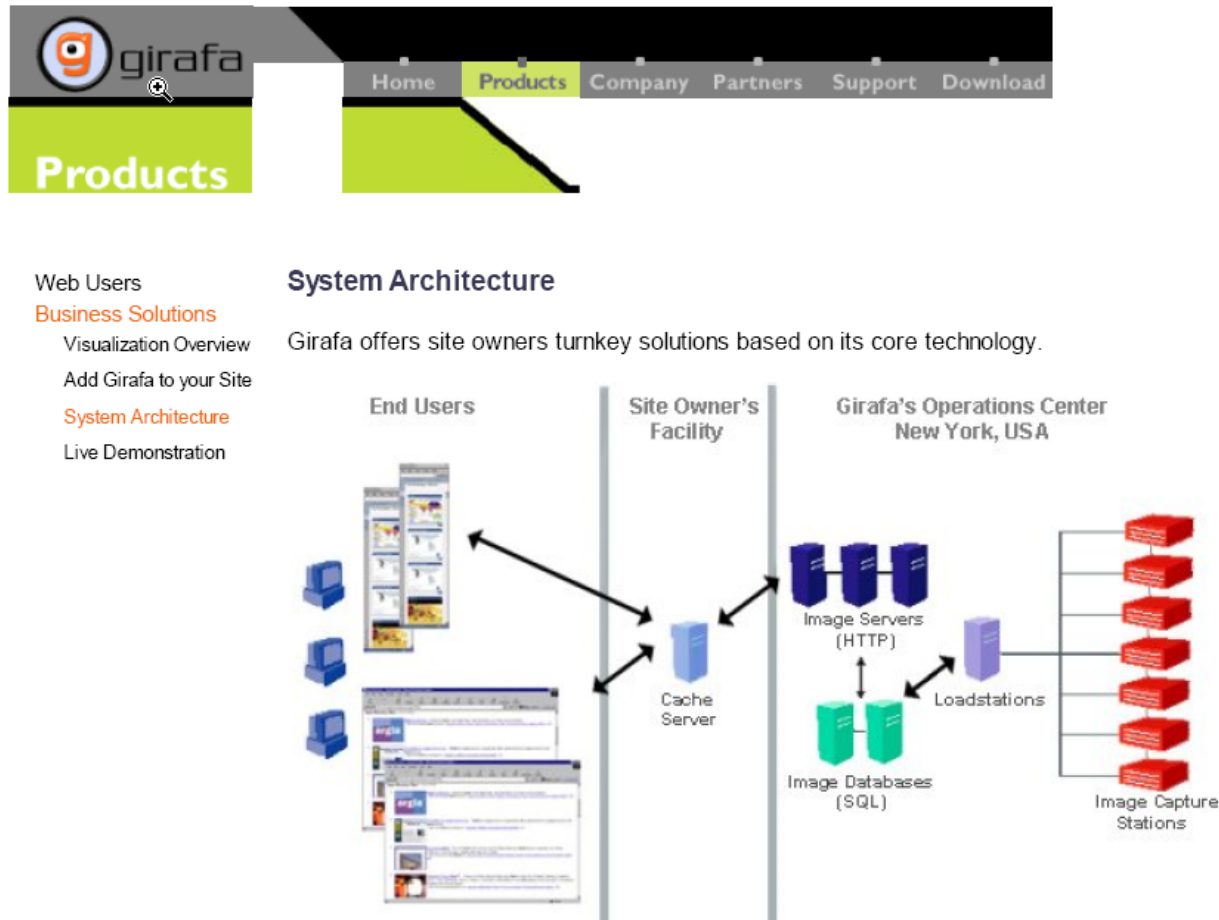
The Girafa Cache Server consists of three components: a Web Server, a Database Server, and an Image Store. The **Web Server** is responsible for accepting a user request, parsing it, and serving the required thumbnail. The Database Server stores the information required for the operation of the Girafa Cache Server, including the translation from GTL to the desired image, and the status of cached thumbnails. The **Image Store** holds the collection of currently cached thumbnails.  
[GIR001867.28719, attached hereto as Ex. 2 (emphasis added)]

Thus, the image and web servers are not “separate,” as Dr. Myers has construed this limitation,<sup>9</sup> since the Girafa Cache Server, which is a proxy of the image server, serves the images *and* contains the visualization functionality of the web server.

Additionally, I viewed Girafa’s web page from late 2001 from the Internet Archive, web.archive.org, and it confirms that the Girafa product employed a cache server which carried out the functions of both the “image server” and the “web server,” rather than employing separate image and web servers. I’ve included a screenshot of the diagram below, at Figure 1.

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<sup>9</sup> See Myers’ infringement report at ¶ 61 (requiring physically separate image and web server machines) and Myers’ validity report at ¶ 18 (defining the “web server” as the server that “includes the visualization functionality which embeds the commands to download the thumbnail images”).



[Figure 1]

Girafa's System Architecture used the Girafa Cache Server as both the image server and the web server, under Dr. Myers' most recent construction of the terms.

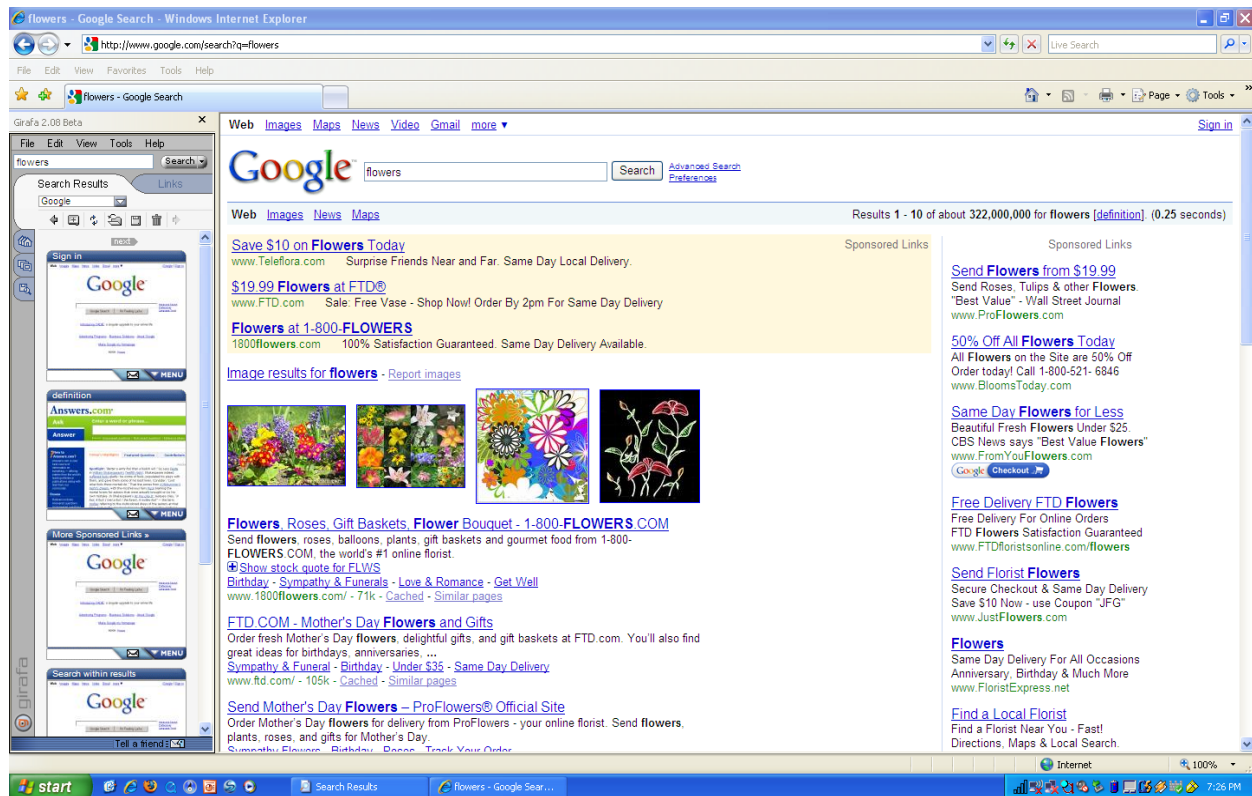
Reviewing Girafa's web page circa 2001 from the Internet Archive, web.archive.org, also suggests that the Girafa product did not display "home pages" in place of target pages. Girafa's web site advertised its product as the following:

**See thumbnail images of your search results.** *Girafa shows you thumbnail images of your search results displayed alongside the textual search results provided by the search engine.* The visual presentation helps identify relevant links and eliminate redundant entries to unwanted web sites or dead links. This not only saves you time, it also adds efficiency and context to whatever it is you're looking for. (emphasis added)

This description makes no mention of displaying the thumbnail of the search results' home pages rather than the target web pages. Instead, Girafa says its toolbar provides "thumbnail images of your search results." Even if the Girafa toolbar product *was* displaying "home page" thumbnails, it is clear that this was not a feature Girafa advertised as a benefit on its website.



I installed version 2.08 of the Girafa software, mentioned in the PC Magazine article referenced in ¶ 163 of Dr. Myers' rebuttal report, and attempted to investigate whether the thumbnail images displayed alongside the textual search results were images of the target pages of the search results links or images of the "home pages" of the search results links. As shown below in Figure 2, the thumbnail images displayed appeared to have no relationship whatsoever to the search results links, meaning they were neither target pages, nor "home pages" of the search result links (the first non-sponsored search result link, for example, is to "www.1800flowers.com" while the first thumbnail image appears to be of the Google website).<sup>10</sup>



[Figure 2]

23. Dr. Myers has not established that Girafa's products practice the allegedly innovative elements of the claims of the '904 patent, and I do not believe that they do. Consequently, there is no nexus between any potential commercial success Girafa may have had and the invention claimed in the '904 patent.

<sup>10</sup> It is unclear if the behavior exhibited by the toolbar is the same behavior that would have been exhibited at the time of the PC Magazine referenced by Dr. Myers.

**3. Dr. Myers does not establish a nexus between the claimed invention and any commercial success of the accused products**

24. Additionally, Myers did not claim or prove that the alleged commercial success of the defendants' products is *caused* by practice of the patented features. Although he relies on Ran's declaration and defendants' press releases that emphasize the *importance* of a separate image server, [Myers ¶¶ 155-165], none of these sources show that the commercial success of the products, if any, is attributable to the use of a separate server to store and provide images.

25. In ¶¶ 160-161, Myers claims that substituting home pages is commercially successful but the evidence cited only states the obvious – displaying thumbnail previews of home pages (rather than target pages) results in fewer images being stored. Nothing links this choice to commercial success.

26. I understand that under the applicable law, evidence of commercial success cannot show non-obviousness if that success is caused by elements disclosed in the prior art. [*Ormco Corp.*, 463 F.3d at 1312 n.14 (collecting cases)]

27. To the extent that Myers claims that the thumbnail image products in this case were commercially successful because they allegedly employ separate image and web servers and allegedly provide thumbnails of home pages instead of target web pages, such features were known in the art before the patent was filed, as I discussed in ¶ 7, *supra*.

28. Therefore, in my opinion, commercial success is not a relevant secondary consideration of non-obviousness of the '904 patent.

**E. Praise of others**

29. Myers cites the declaration of Shirli Ran and exhibits attached thereto for the proposition that the patented technology was praised by others in the field. [Myers ¶¶ 162-165]

30. I understand that under the applicable law, evidence of praise of others cannot show non-obviousness if the patentee does not establish a nexus between the praise and the merits of the claimed invention. [*Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1327-28 (Fed. Cir. 2008)]

31. As I discussed at ¶ 22, *supra*, in my opinion, Girafa's products do not practice the claims of the '904 patent.<sup>11</sup> Therefore, there is no nexus between any praise Girafa's products received and the '904 patent.

32. Even if Girafa's product practiced the patent, the articles attached to Ran's declaration do not praise the allegedly novel features of the '904 patent. The articles do not even mention

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<sup>11</sup> As I noted earlier, Dr. Myers does not opine on whether any of Girafa's products practice the claims of the '904 patent.

separate image and web servers, let alone praise this attribute.<sup>12</sup> Additionally, none of the articles praise the use of thumbnail previews of home pages, rather than the target pages, or suggest that this feature is desirable. On the contrary, the cited articles suggest that the Girafa product displayed thumbnail images of *target pages* rather than home pages. For example, in Ex. D-2 to Myers' rebuttal report on validity, PC Magazine describes Girafa 2.08 as follows: "Highlight a link on any web page, then press the Visualize button in the collapsible Girafa pane. Immediately, a thumbnail of the site appears in the window." [See also, Ex D-3 ("If he likes what he sees, he just double-clicks on the thumbnail, and the site is loaded up"); Ex. D-4 ("[I]t shows you thumbnails of search results whenever you use a search engine, then lets you hop over to the site with a click.")] None of these articles praise the allegedly novel features of the '904 patent.

33. Therefore, in my opinion, the praise of others is not a relevant secondary consideration of non-obviousness of the '904 patent.

### **F. Conclusion**

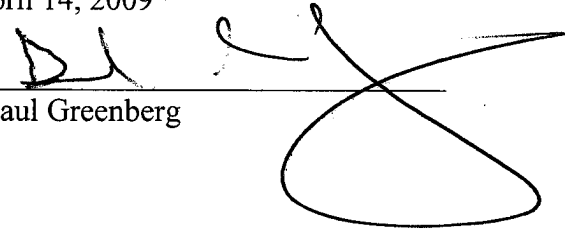
34. In conclusion, I do not believe any secondary considerations are relevant to my analysis of the obviousness of the '904 patent.

35. Should I be called upon to testify, I expect to testify consistently with the opinions set forth herein.

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<sup>12</sup> On the contrary, each of these articles appears to describe Girafa's browser plug-in product, which does not employ a "web server . . . including visualization functionality" as required by claims 35 and 46, because the web browser includes the visualization functionality, not the web server.

Date: April 14, 2009

Signed: 

Saul Greenberg

# EXHIBIT 1

**From:** yval@girafa.com on behalf of Yuval Yarom <yval@girafa.com>  
**Sent:** Tuesday, January 29, 2002 4:31 AM  
**To:** Oliver Hurst-Hiller <oliverhh@microsoft.com>  
**Cc:** Sally Salas <sallysa@microsoft.com>; Yelena Branch <yelenab@microsoft.com>; Shirli Ran <shirli@girafa.com>  
**Subject:** Re: displaying redirected sites

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Hi Oliver,

The Girafa Cache System first handles the URL to homepage conversion, and then retrieves the image of the resulting URL from the Girafa database.

For example, when the Cache system receives a request for the image of '<http://204.29.171.10/resolver.dll?action=resolution&realname=Batman&charset=utf-8&locale=en-US&providerid=113>' (the URL of the realname 'Batman'), it converts it to '<http://204.29.171.10>' (after verifying that the host is not in the deep crawl list). The image of '<http://204.29.171.10>' (the RelatNames server) is then returned.

The capture system is the one that handles the redirects. If, when attempting to capture a URL, the server the URL resides on returns a redirect result, the redirect is followed, and the destination is captured. For example, when the capture system attempts to capture the image of the realnames server above (<http://204.29.171.10/>), it receives a redirect to '[http://www.realnames.com/Eng/Eng\\_Corporate\\_RealNamesHomepage.asp](http://www.realnames.com/Eng/Eng_Corporate_RealNamesHomepage.asp)', and the image of this server is returned.

Had the realnames server been on the deep crawl list, the Cache server would have retrieved the image of the URL. The capture system, in that case, would have followed the redirect to '<http://navigation.helper.realnames.com/framer/1000/default.asp?realname=Batman&cc=US&lc=en%2DUS&frameid=1565&providerid=113&url=http%3A%2F%2Fwww%2Edccomics%2Ecom%2F>', which displays the realnames banner and the www.dccomics.com page.

The same is true for the MSN ads and the overture results. (The error Yelena refers to is actually the home page of <http://ads.msn.com>.)

Attached please find a copy of the Girafa Caching Solution overview prepared for MSN on September 2001. Section 2 describes the cache server.

Regards  
Yuval

> Oliver Hurst-Hiller wrote:  
>  
> Yuval,  
>  
> We're seeing images of intermediary redirect pages, not final  
> destination pages. Yelena's notes are below.  
>  
> Could you confirm that you can reproduce this on your end? Please  
> contact Yelena directly if you need help to repro the behavior.  
>  
> Could you also give us an estimate on the fix as well as any time  
> needed for the fix to propagate through the image database (ie. time  
> needed for refreshing of the image db, if necessary)?  
>

- > Thanks!
- > Oliver
- >
- > According to contract, Girafa should capture the final destination of
- > the URL, not any intermediary pages (e.g. RN, ads, Overture results).
- >
- > Steps to repro:
- >
- > 1. Go to Search Pane and type "batman"
- >
- > 2. First result is a Real Name and should display a thumbnail for
- > dcomics.com. Instead it shows the RN home page
- >
- > 3. Second and third results are ads redirects, should go to fye.com
- > and amazon.com respectively. It displays some error page instead.
- >
- > 4. Last 3 images are got Overture home page instead of
- > hollywood-costumes.com, newcadia.safeshopper.com and
- > personallyyoursbooks.com (or whatever Overture would select for this
- > query).
- >
- >

# EXHIBIT 2



## The Girafa Cache Server

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### Introduction:

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The Girafa Cache Server (GCS) is a proxy of the Girafa Image Servers located at a site data center. It serves for two purposes. First, it provides translation from site-specific URL IDs to the Girafa thumbnail of the URLs, and second, it decouples the site users from the Girafa Image Servers, providing better performance, and enhanced reliability to the Girafa service for the site.

Images on the GCS are identified by Girafa Thumbnail Locators (GTLs). Girafa supports two forms of GTLs: URL GTLs, and Key GTLs. In URL GTLs, the URL the image is required for is explicitly specified in the GTL. For Key GTLs, a unique key is associated with each URL, and this key is specified in the GTL.

### Architecture:

-----  
The Girafa Cache Server consists of three components: a Web Server, a Database Server, and an Image Store. The Web Server is responsible for accepting a user request, parsing it, and serving the required thumbnail. The Database Server stores the information required for the operation of the Girafa Cache Server, including the translation from GTL to the desired image, and the status of cached thumbnails. The Image Store holds the collection of currently cached thumbnails.

### GTLs:

-----  
A GTL is a URL of the form:

`http://<cache_host_name>/srv/i?r=<key_or_URL>`

Where `cache_host_name` is the name of the host running the Girafa Cache Server software, and `key_or_URL` is the Key of the required URL, or the URL itself. For URL GTL, the URL should be URL-encoded, to escape all special characters.

For example, if the GCS software is installed on the host `girafa.mycompany.com`, and is configured to accept URL GTLs, the thumbnail for `http://www.girafa.com` is:

`http://girafa.mycompany.com/srv/i?r=http%3A//www.girafa.com`

The 'http://' prefix is not required in the encoded URL, and the same thumbnail can also be specified as:

`http://girafa.mycompany.com/srv/i?r=www.girafa.com`

If the GCS is configured to accept Key GTLs, the thumbnail of the host whose ID is 578661 is:

`http://girafa.mycompany.com/srv/i?r=578661`

To display a thumbnail, insert the GTL as the source of an IMG tag, for example, this HTML code displays the thumbnail of `http://www.girafa.com`, as a link to the site

```

<A href="http://www.girafa.com">
  <IMG border=1 width=160 height=120
    src="http://girafa.mycompany.com/srv/i?r=http%3A//www.girafa.com">
</A>

```

#### Key GTLs:

-----

Key GTLs have three advantages over URL GTLs. They are more compact, more efficient, and less prone to unauthorized use. Their main disadvantage is the need for the site and the GCS to 'agree' on what key specify which URL. The site has to be able to provide the key for each URL, in order to generate the GTL, and the GCS has to be able to convert the key back to a URL, for it to be able to provide the thumbnail of that URL.

Most sites store the URLs in a database, and have a unique record ID for each URL. Such a record ID is the best choice for a key, as it requires no changes in the site's database.

The recommended method for informing the GCS of the URL specified by each key is the use of a Key Translation Server (KTS). The KTS is an HTTP redirection service, which, when provided with a key, returns an HTTP Redirect response to the URL specified by the key. Girafa maintains a sample KTS with the base URL

<http://www.girafa.com/KTS.acr?key=>

The sample KTS provides translations for the keys 1, 2, ..., 3000. E.g., the URL <http://www.girafa.com/KTS.acr?key=173> provides a redirect to the Girafa homepage (<http://www.girafa.com>).

A sample PHP code for a KTS can be found in `/Girafa/doc/samples/KTS.php`

If the KTS is not an option for a site, the translation of keys to URLs can be specified by creating a translation file, and sending the file to the GCS by using the script `http://<cache_host_name>/addBatch.php`. Each line in the translation file should contain a key and a URL separated by a single space. See the file `/Girafa/doc/samples/translation` for a sample of a translation file.

The script `http://<cache_host_name>/addSite.php` can be used to provide a translation for a single key.

#### URL GTLs:

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To avoid unauthorized use of the images, the GCS, when serving URL GTLs, provides thumbnails of approved sites only. To add sites to the list of approved sites, create a file with a list of URLs, and send it to the GCS by using the script `http://<cache_host_name>/addBatch.php`. URLs can be added also by using `http://<cache_host_name>/addSite.php`.

#### Preparing for Installation:

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For the installation, you should have a host running one of the supported operating systems. The currently supported systems are RedHat Linux versions 6.2 and up, and FreeBSD versions 4.2 and up, on an Intel based architecture. It is recommended to dedicate one partition for storing the images. Recommended parameters for this partition are:

Size: Minimum of 8K for each image  
Inodes: Minimum of 100000 plus 1 for each image  
Block Size: 4KB  
Fragment Size: 512 Bytes

Increasing the block size and the fragment size may improve performance.

The partition size should be increased for such configurations.

Girafa recommends setting the 'noatime' flag on the images partition.

At least 5KB should be dedicated for each URL stored in the Girafa Cache Server database, and 100MB should be dedicated for the Girafa Cache Server software.

The Girafa software should be installed in the directory /Girafa. /Girafa must exist. It may be a link to a different directory.

You must have root access to the host running the Girafa Cache Server software.

The machine should not run a web server, or a MySQL Database server.

To operate the Girafa Cache Server, you will require an activation key, and the name of the Girafa Image Server that will serve thumbnails to your site. You can get the activation key and the server name from Girafa.

The KTS, if you intend using one, should also be available.

#### Installation:

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Extract the Girafa Cache Server software in the /Girafa directory. Execute the configuration script /Girafa/aranha/scripts/configure. You will be asked to provide the activation key, Girafa Image Server name, paths for Database and Image Store, some information about the host you are installing on, and configuration information such as the type of GTLs you would like to use.

To start Girafa, run the command '/Girafa/aranha/scripts/Girafa start'

If you are not using the KTS, you should now provide the list of approved URLs, or the key translation.

#### Unavailable Thumbnails:

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For some URLs, Girafa may be unable to provide a thumbnail. The reasons for

that are that the site does not respond when Girafa attempts to capture the thumbnail, and that Girafa is not yet aware of the site. If Girafa is not aware of the site, it will be added to the queue of thumbnails to be captured, and the thumbnail should be available within a day or two. When the GCS is requested to provide thumbnails for such URLs, it returns a default "Image not Available" slide. The default slide is stored in the file /Girafa/data/htdocs/images/error.gif. To use a customized slide, create a GIF image of size 160x120, and replace the default image with it.